REMARKS

Presently the application includes claims 1, 2, 4, 6-24, 26, and 28-34, with claims 1, 13, 20, 24, and 34 being independent claims.

Applicants acknowledge allowance of claim 34 and the Examiner's objection to claims 4 and 31 as being dependent on a rejected base claim.

The Examiner rejected independent claims 1, 13, 20, and 24, and various dependent claims, as being obvious in view of Fishman (EP 0 909 045). Applicants traverse for the following reasons.

When referring to claims 1, 20, and 24, the Examiner admits that "Fishman does not explicitly disclose monitoring the time averaged state of polarization of the optical signal." Applicants note that the only rejected independent claim that includes this limitation is claim 1 and address claims 20 and 24 below. To address this deficiency, the Examiner asserts that "[i]t would have been [an] obvious design choice to modify Fishman's system to monitor the time averaged stage of polarization of the optical signal to analyze the distortion more accurate[ly]." Applicants respectfully disagree with this assertion. The Examiner provides no basis that the time averaged state of polarization of the optical signal can be used to analyze the distortion more accurately. Moreover, there is no indication that the time averaged state of polarization has any relevance whatsoever to the signal distortion monitored by Fishman. Accordingly, there is no motivation or suggestion in Fishman to monitor the time averaged stage of polarization of the optical signal. Thus, the claims are patentable over Fishman.

Applicants further submit that there are additional greater differences between the methods and apparatus recited in the rejected claims and the compensation schemes disclosed by Fishman than the Examiner appreciates. For example, nowhere does Fishman disclose or suggest determining the principal states of polarization of an optical medium, or a polarization module configured to do so, as required by independent claims 1, 13, 20, and 24. Nor, upon reading Fishman, would one of ordinary skill in the art be motivated to modify Fishman's methods/apparatus to include such a step/module because knowledge of this information is not pertinent to the methods and systems of Fishman.

Fishman's compensation schemes monitor the distortion in an optical signal and adjust a compensator to minimize this distortion (see, e.g., Fishman, ¶ [0021]). Fishman achieves this by monitoring the intensity of the detected optical signal and generating a feedback voltage, V_f, related to distortion in the signal (id., ¶ [0019]). Fishman uses the feedback voltage to adjust variable parameters of a compensator (e.g., the polarization angle, θ, in a polarization transformer and the differential time delay, τ_c, in a delay line) to maximize V_f (id., ¶ [0027]). In order to obtain an "unambiguous" feedback signal, Fishman measures the amplitude of a plurality of frequency components contained in the optical signal when generating V_f (id., ¶ [0025]).

Because Fishman seeks only to maximize the feedback voltage, V_f, there is no need to determine the principle states of polarization of the optical medium. Accordingly, upon reading Fishman, one of ordinary skill in the art would not be motivated to modify Fishman's compensation schemes to include such a step.

Similarly, Fishman does not disclose or suggest methods or systems that include determining a magnitude of time delay between the principle states of polarization of the optical medium, as required by independent claims 1, 13, 20, and 24. Like knowledge of the principle states of polarization, knowledge of the magnitude of time delay between the principle states of polarization is superfluous for polarization mode dispersion (PMD) compensation using Fishman's methods.

Where Fishman does mention the principle states of polarization and the magnitude of time delay between the principle states of polarization of the optical medium, it is while explaining the theory behind how his methods compensate PMD in a fiber. For example, in paragraph [0021], Fishman explains that V_f is maximized when the differential time delay, τ_c, in the compensator is equal to the magnitude of time delay in the fiber. Thus, although Fishman refers to these parameters while describing his compensation scheme, Fishman suggests that their knowledge is not necessary when implementing his methods. Accordingly, one of ordinary skill in the art would not be motivated to modify Fishman's compensation schemes to include their determination.

Furthermore, independent claims 13 and 20 require that the optical transformer be arranged in an optical path of the medium after the polarization module. Not only does Fishman not disclose or suggest this arrangement, but also such a configuration would render Fishman's system's inoperable because, as discussed previously, Fishman's schemes operate in feedback mode. Because claims 13 and 20 require that the optical transformer be downstream of the polarization module, the claimed configuration would provide no information to a feedback signal on how previous adjustments to the compensator affect the optical signal. Accordingly, one of ordinary skilled in the art would not be motivated to make such a modification to Fishman's compensation apparatus.

For at least these reasons, Applicants submit that claims 1, 13, 20, and 24 are not obvious in view of Fishman and ask that the rejections be withdrawn.

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Respectfully submitted,

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